

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>B03/0450PC</b>	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. <b>PCT/EP2004/007768</b>	International filing date (day/month/year) <b>14.07.2004</b>	Priority date (day/month/year) <b>17.07.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>C07C51/58, C07C63/10</b>		
Applicant <b>BASF AKTIENGESELLSCHAFT</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>2</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished

- ☒ the description:

pages 1-11 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☒ the claims:

nos. \_\_\_\_\_ as originally filed/furnished

nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19

nos.\* 1-7 received by this Authority on 12.05.2005 with letter of 10.05.2005

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the drawings:

sheets \_\_\_\_\_ as originally filed/furnished

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims	1-7	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

D1: US-A-3 691 217 (MCCANN THOMAS J) 12 September 1972  
(1972-09-12)

D2: US-A-3 187 057 (HOFF MELVERN C ET AL) 1 June 1965  
(1965-06-01)

D3: EP-A-0 009 205 (BAYER AG) 2 April 1980 (1980-04-02)

D4: EP-A-0 706 987 (CIBA GEIGY AG) 17 April 1996  
(1996-04-17).

## 1. Novelty (PCT Article 33(2)):

1.1 Document D4 discloses the synthesis of alkyl-substituted aromatic acid chlorides, wherein in a first step an alkylated benzene is reacted with CO<sub>2</sub> in the presence of a Friedel-Crafts catalyst and the resulting carboxylic acid is reacted with a halogenating agent to yield carboxylic acid halide.

1.2 In document D1 substituted aromatic acid chlorides are produced by reacting substituted trichloromethylated aromatic compounds with an organic acid and tin chloride.

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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1.3 In document D3 substituted aromatic acid chlorides are produced by reacting substituted trichloromethylated aromatic compounds with benzoic acid and/or water in the presence of a catalyst. A preferred catalyst is, for example, FeCl<sub>3</sub> (see page 4 and examples 3 and 4).

1.4 In claim 1 a method for producing alkyl- or halogen-substituted aromatic carboxylic acid chlorides is claimed, which is characterized in that in a first step a substituted aromatic compound (II) is reacted with CCl<sub>4</sub> in the presence of a Friedel-Crafts catalyst to yield trichloromethylated aromatic compounds, which, in a second step, are reacted with water or a protonic acid to yield aryl carboxylic acid chloride.

1.5 None of the search report citations discloses the method according to claim 1.

Consequently, the subject matter of claims 1-7 is novel.

**2. Inventive step (PCT Article 33(3)):**

2.1 The technical problem can be considered that of providing a method for producing substituted aryl carboxylic acid chlorides, which is improved relative to the method known from the prior art.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
2.2	<p>Documents D1 and D3 are both considered the closest prior art.</p> <p>Neither document D1 nor document D3 discloses how the trichloromethyl benzenes were produced.</p> <p>It is known from document D2 that alkyl-substituted trichloromethyl benzenes can be produced simply and with a considerable quantitative yield, by reacting alkyl-substituted benzenes with <math>\text{CCl}_4</math> and <math>\text{AlCl}_3</math>.</p> <p>For a person skilled in the art it would be obvious to combine the method known from document D2 with the methods known from documents D1 and D3, since this would permit very high yields. However, a person skilled in the art would have no reason to directly use the water-containing organic phase resulting from the first step in the second step. As a result, the organic phase is dried chemically and in the second step anhydrous <math>\text{CCl}_4</math> can be obtained.</p> <p>The method according to claim 1 is therefore inventive relative to the methods known from documents D1 and D3, in combination with the method of document D2.</p> <p>Consequently, the subject matter of dependent claims 1-7 can also be considered inventive (PCT Article 33(3)).</p>

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Contrary to PCT Rule 5.1(a)(ii), the description does not cite documents D1 to D3 or indicate the relevant prior art disclosed therein.
2. The description has not been brought into line with the new claims 1-7.